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Easy-to-read meets accessible web in the e-government context

Thea van der Geest^{a*}, Eric Velleman^b

^aUniversity of Twente, P.O.Box 217, 7500AE Enschede, Netherlands

^bAccessibility Foundation, Christiaan Krammalaan 2, 3571AX Utrecht, Netherlands

Abstract

In the e-government context, content of information and service systems needs to be accessible and easy-to-read. E-government systems are increasingly self-service systems. If the content of these systems is incomprehensible, citizens are not able to exercise their rights or fulfill their duties. Comprehensibility, however, is more than just providing text that is easy to read. The ease-of-understanding of a text is a result of the interplay between content characteristics, reader characteristics and task/context characteristics, as is the case for usability. This multi-faceted form of accessibility cannot be assessed and evaluated with just the existing easy-to-read guidelines. Measuring ease-of-understanding, which is a legal requirement for e-government systems and other public services, requires a process-oriented approach besides the currently available product-oriented easy-to-read guidelines.

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1. Accessible e-government systems

One of the four essential underlying principles of the Web Content Accessibility Guidelines (version 2.0) is the principle that web content, the information as well as the interaction and the interface, needs to be understandable

* Corresponding author. Tel.: 0031-53 489 3299; fax: 0031-53-4894259.
E-mail address: t.m.vandergeest@utwente.nl

(W3C WAI, 2012). Web content should be readable and easy-to-understand for the whole range of potential users, including those with special user needs. If not, the web content does not meet the specified and agreed accessibility standards.

The requirement that web content should be readable and easy-to-understand is especially critical when the content (information, services or communication) is of general public interest, such as in the case of e-government systems and applications. Citizens, clients, customers increasingly communicate with governmental and other organisations of public interest in a digital, networked communication and service environment like the web. They use PCs, smartphones and tablet computers to contact their local and national government agencies about a wide range of topics and e-services that governments offer or enforce: tax paying, official documents and registrations, permits, health care or housing arrangements, education, and much more.

Information about regulations, procedures and services used to be communicated in person by service employees or public officials, often in face-to-face contact situations. However, the information and service delivery by a 'real life official' is migrating to the digital environment. The assistance, support or feedback in the administrative processes that a human person could provide is being replaced by self-service systems and applications. That means that citizens must find their way around in the wealth of information and applications on the web and help themselves to exercise their rights or fulfill their duties [1].

The positive side of the move to digital public self-services might be that the autonomy of citizens is enhanced. They might now be better able to help themselves, possibly with systems and applications that are easier to manage and more accessible for them than traditional city halls or paper forms. On the negative side, the governments' reliance on self-service systems and on citizens who are fully able to use these systems to meet their goals and fulfill their duties could easily lead to new or reinforced forms of inaccessibility and exclusion.

2. Alphabetic and digital literacy

The underlying assumption of governmental digital self-services is that citizens have both a sufficient level of alphabetic literacy to process and apply the content, and the required digital skills to work effectively with the e-government systems. To work effectively with self-service systems, citizens are supposed to be able to locate the relevant content, select what to read, understand the content and evaluate it as relevant to their situation, question or task. These skills are traditionally covered by the term alphabetic literacy, that is: adequate text processing and reading skills. But using a self-service system effectively does require more than traditional alphabetic literacy.

Once citizens have found and read the appropriate information in a self-service system like a government website, they must be able to *apply* the information in order to achieve their self-formulated or government-coerced goals. In many cases, this implies that they have to translate generic and abstract administrative information to their specific, personal situation and make inferences about the aims and goals of legislators and administrators. These processes require a much higher level of reading and information processing skills, and in addition also require bureaucratic competence and prior knowledge about the workings of the public system.

The migration to e-government self-service systems also implies that citizens are supposed to have a wide range computer-related skills to process content that is presented in a digital environment. Citizens who for example are forced to use a tax declaration system on the internet, must have medium-related skills with regard to interaction and interface operations before they can even get to the application. These medium-related skills are different for PCs, tablets or smartphones, for specific operating systems, and for the various assistive technologies that the tax payer might want to use. On top of that, applications and systems come with very specific digital tools and functions, e.g. search engines, which require specific skills. That is why researchers of new forms of literacy stress that locating, reading, understanding and using *digital* content rather than traditional text on paper requires a new and more extended form of literacy [2]. Just adapting the text in e-government self-service systems to relatively low-level readers, for example by applying Easy-to-read guidelines, does not suffice to make the information and services content truly comprehensible and accessible for the whole range of users with varying alphabetic and digital literacy levels.

3. User groups at risk of exclusion

Governmental and other public services are meant ‘for everyone’, but specific services and regulations aim at identifiable groups of people, such as home owners or single parents with young children. Specific groups in society, such as the elderly, people who have a chronic disease or disability, the unemployed and people with the lowest incomes have to deal most with government services, agencies and systems. The 2012 annual report of the Dutch national ombudsman, appropriately titled ‘My incomprehensible government’ [3] shows that particularly those groups experience many problems with inaccessible, incomprehensible and incompatible government information and services. According to studies of adult literacy in The Netherlands, about 10% of the Dutch population has a literacy level that is insufficient to use written information to fully participate in society, realize their own goals and develop their knowledge and competences [4]. For this low-literate or illiterate group, public e-information and e-services are plainly inaccessible. But the group of people who have problems communicating and transacting with government services is obviously much bigger. The same groups who are the most frequent clients of government services happen to have the lowest levels of digital skills compared to the population at large [5] and they experience serious problems in comprehending digital information and applying it in realistic daily life tasks [6].

Dutch government agencies, like the Tax Administration and the Social Insurance Bank, strive to present information and services in such ways and forms that citizens’ needs and skills levels are met. Their web editors work with web writing style guides and easy-to-read guidelines to meet the needs of citizens with lower levels of (digital) literacy. The Social Insurance Bank SVB, which is responsible for retirement pensions and other types of social benefits, even makes a specific easy-to-read alternative version of its website available (www.svbabc.nl). This easy-to-understand website has easy-to-read written text which is read aloud automatically. It also contains a friendly assistant, an avatar, who guides visitors through the website.

However, evidence that the efforts of government agencies indeed result in comprehensible, usable and effective digital content is lacking [7]. On the contrary, uptake of e-government services is low, for one reason because citizens don’t trust themselves in processing information or performing tasks correctly [8]. When customers would lack skills, self-confidence or trust in their dealings with commercial service providers, they would decide to drop out of the transaction, leaving the service provider with a lost business opportunity. But citizens have a different relationship with their public service providers. They cannot decide to leave a government website and choose for another website or service, when they perceive the e-government services as inaccessible, unacceptable or unusable [9]. This makes it even more pressing and urgent that government agencies and other public service providers undertake all possible efforts to ensure that their content is accessible and comprehensible. What does it take to provide truly accessible and comprehensible public information and services for all citizens, including those who are elderly, low-literate or have a disability?

4. Ease-of-reading as text-in-context usability

In many countries and on multiple occasions, alarm bells have been rung about the problem of incomprehensible and hence inaccessible government communication. In the USA, this has resulted in the Plain Writing Act of 2010, signed by President Obama on October 13, 2010. This Act aims at improving the effectiveness and accountability of Federal Agencies to the public, by promoting clear government communication that the public can understand and use. The term ‘plain writing’ in the Act means “writing that is clear, concise, well-organized, and follows other best practices appropriate to the subject or field and intended audience.” [10]

The Act is exemplary for two reasons. First, from the definition, one can see that the legislators have been aware that the comprehensibility of writing is contextual and user-specific. The ease-of-reading of a specific written document (in paper or in electronic form) depends on the subject at one hand and on the intended audience at other hand. Second, the formulation of the Act demonstrates that easy-to-read texts are not just a goal in itself. In the view of the legislators, citizens must be able to understand *and use* the communications of the government. That means that the standards for comprehensible, accessible government communication are not defined as a set

of text characteristics (like conciseness), but as user performance characteristics. In the view of the Act, plain writing is usable writing, and easy-to-read texts are easy-to-use texts.

This approach to plain government communication is essentially different from the views that the W3C Web Accessibility Initiative holds on the issue of readability of web content [11]. In a working document of 2012, titled *Understanding WCAG 2.0*, the working group offers explanation and guidance on the accessibility success criteria mentioned in the Web Content Accessibility Guidelines 2.0. The section on Guideline 3.2 describes the success criteria for readability of web content. The document gives guidance on aspects like:

- Making sure that the language of pages or text parts is correctly identified so that good pronunciation by assistive technologies is assured;
- Giving extra explanation for difficult or infrequently used words;
- Formulating content in a way that people with an educational level of lower secondary school can understand the text [11].

The general advice is to use the clearest and simplest language appropriate for the content and to provide easy-to-read versions of basic information, with a direct link to the webmaster as a fallback option. It appears from the success criteria and guidance that the working group addresses inaccessibility of web content as a problem of written text characteristics, like unclear and difficult words or sentences. The guidelines seem to suggest that any content can be made easier to understand by applying this kind of standards. However, we think that comprehensibility is the result of an interaction between three factors: the way the text/content is formulated and formatted, in the context of the attitudes, skills and knowledge the reader brings to the task, and the nature of the task, the issue, service process, or procedure and its value for the citizens in their personal situation.

We propose a different approach to assessing the ease-of-reading of web content than following a set of Easy-to-read or Information-for-all guidelines that focus solely on text or content characteristics. We suggest to define ease-of-reading, in line with the ISO 9241 definition of usability, as ‘the effectiveness, efficiency and satisfaction with which specified readers achieve specified goals with particular texts’. This means that ease-of-reading is the outcome of the interplay of three types of factors:

- Text/content (design) characteristics, e.g. the vocabulary used or the navigability of the website;
- Individual characteristics of the (specified) reader, e.g. the reader’s alphabetic literacy level, prior topic knowledge, or digital skills;
- (Specified) task or situation variables, e.g. the complexity of the task, procedure or regulation that the citizen aims to execute, or the value or impact of requesting a particular service.

We think that any kind of standard, guideline or process for ensuring and evaluating easy-to-read, easy-to-understand and easy-to-apply web content should take this multi-faceted view on content accessibility into account. But what does adopting this view mean for the practices of assessing and evaluating whether websites such as government systems and applications, meet the standards of good accessibility?

5. How to evaluate websites for ease-of-understanding?

In the previous section, we argued in favour of considering easy-to-read web content as something that should be achieved in the interplay of content characteristics, user characteristics and task characteristics. This multi-faceted view complicates existing accessibility measurement and evaluation practices. It is obviously easier to define a set of text or content characteristics and then put the text to the test, without considering the specified users with their specified goals. However, if one considers readability and comprehensibility not just as a text

characteristic, but as an effect of appropriately formulated content for specific users in specific use situations, then measuring and defining success criteria becomes a complex undertaking.

Whatever measuring instrument or evaluation criterion one would like to propose for measuring the ease-of-understanding of web content, it should meet three general methodological quality requirements:

- The measurement must be valid. Ease-of-understanding assessments must really reflect accessibility for all intended audiences. That means that documents and content that meet the standards indeed are comprehensible and usable (easy-to-read) for all intended audiences and for all specified goals, whereas content that does not meet the standards is not or far less comprehensible.
- The measurement must be reliable. It must be possible to assess unambiguously and consistently whether or not content is meeting the standard. When different testers are using the same measurement method to assess conformance, they must find the same outcomes. A piece of content that meets easy-to-read criteria in one test session, should also be passing the threshold in the next test session.
- Measurement instruments, procedures and standards must be practical and feasible: Applying the standard must be possible in practice and assessing compliance or conformance must be feasible. The benefits of applying the standard and assessing compliance should balance the costs.

Existing sets of easy-to-read content guidelines, like the set of Inclusion Europe [12], Make it simple [13], Easy Read [14] and the Stichting Makkelijk Lezen criteria [15] all focus on document and text characteristics. The WCAG 2.0 guidelines and criteria for readability are a selection of the guidelines in these sets, with a strong bias to guidelines that support correct pronunciation of text read-out by screenreaders¹¹. Those guidelines and criteria have in common that they score relatively well on feasibility and reliability. However, as we argued before, the validity of those measures for revealing true ease-of-reading, true comprehensibility for specific users in specific situations is debatable. Yet, these are the guidelines and standards that are widely used by governments to evaluate the ease-of-reading of their website content.

In the past years we have been involved in a number of studies in which we tried to assess the true ease-of-reading of governmental web content or services by asking low-literate citizens to find, read and use public information and services that were intended for them. In the cases that we describe here, the content was written and edited to meet Easy-to-Read standards. In one study with readers with intellectual disabilities [16, 17] we found that the cognitively disabled users of a website of a care provider were better able to answer simple questions about information on the site with the Easy-to-read version, but still found many adapted texts incomprehensible. When a task required that the reader combined information from two different places on the same web page, or made a very simple inference from the information presented, the easy-to-read content did not lead to better task performance than the non-adapted content. Both users with and without cognitive disabilities of the adapted text complained about the lack of text structure, which was a consequence of applying the guideline that every sentence should start on a new line. We asked the disabled readers to read the text on screen aloud, and we heard them stumble, hesitate and misread quite a few words that appear on lists of frequently used and easy-to-understand words.

In another study [18,19], we asked low-literate citizens to read and use web content that the Dutch Tax Administration provides on eligibility for health policy benefits. This type of benefit can only be claimed by people with low incomes. Because of the correlation between lower incomes and lower levels of education and literacy, the web content editors of the Tax Administration had gone to great lengths to ensure that the web content was edited to meet Easy-to-Read guidelines. Even then, the content proved to be very difficult to understand for the citizens in our study. It was interesting to see how individual readers had developed their own range of strategies to avoid reading and still come up with answers for the tasks and questions that we asked them to do. Some people stared at the page without reading and then made up an answer on the basis of their 'world knowledge'. For example, one respondent claimed that he had read that a person with a certain income was not

eligible for the benefits, simply because he thought that this person had enough money to pay for a health policy himself.

These studies with specified users who try to achieve specified goals with easy-to-read web content show that individual characteristics of the reader and task/context characteristics influence the ease of reading and the effectiveness of the content, as much as the actual text formulation does. We could not have found out whether the adapted easy-to-read text was actually accessible without having tested it in realistic use situations with users who are low-literate or have other text comprehensibility problems. That is why we advocate that ‘product-oriented’ standards for comprehensible content, like the common Easy-to-read guidelines and the WCAG 2.0 criteria for readability, are extended with ‘evaluation process-oriented’ standards.

6.A process standard in combination with a product standard

Neither an expert tester who checks off content against a set of guidelines, nor an automatic tool calculating ease-of-reading from text characteristics, can assess whether or not the clearest and simplest language has been used for specified users with specified goals. One needs to involve representative users in the design and evaluation of the web content, like we did in the studies of low-literate users using e-government sites. The Web Accessibility Initiative of W3C gives information and guidance on how to involve users in various stages of designing accessible web content and evaluating whether the design process indeed has resulted in accessible content [20].

For ideas about how to develop a process-oriented standard for assessing the comprehensibility of web content, we can look at developments in the field of user-centred design, usability and user experience measurement. The ISO/TR 16982:2002 standard [21] gives an overview of usability testing methods, some of which can easily be extended to include testing for comprehensibility and accessibility. Tullis and Albert offer a very instructive handbook on how to collect, analyse and present usability metrics, which can well serve as a starting point [22].

A process-oriented standard should define how the user-centred accessibility tests are to be conducted, a protocol that can be used by any organisation that must or want to comply with accessibility legislation like government agencies and service providers that serve the public at large. The protocol (see [23] for an example) should specify at least the following aspects of the accessibility evaluation:

- Specification of intended audiences for the site content;
- Groups of representative test participants involved (e.g. various disabilities), number of test participants per group; selection criteria for test participant characteristics (e.g. age, educational level, digital skills, internet experience);
- -Specification of relevant goals and tasks for the site content;
- Test scenarios and tasks; test procedures; task performance criteria (when is a task successfully performed); task success criteria (percentage of test participants that can perform the task successfully); task efficiency criteria (time-on-task, help required);
- Specification and definition of what counts as an accessibility/comprehensibility issue;
- Issue identification and analysis; severity ratings, analysis of frequency of unique issues, issues per participant/group, issues by participant characteristic, issues by category, issues by task;
- Standards (minimum acceptance levels) for task performance, success and efficiency; standards (minimum acceptance levels) for frequency, severity and type of issues;
- Action plans for re-design and re-evaluation; timeline, resources, process planning, etc.

Accessibility evaluation results of one site are very informative and instructive for content designers and editors of the next site. Therefore we recommend that particularly organisations that conduct accessibility evaluations with public funds, like government agencies, publish the detailed results in a central repository that is open for inspection by accessibility certification agencies or interest groups, but also for benchmarking and knowledge sharing among writers, designers and producers of web content. The repository could form the backbone of user- and task-validated new or adapted versions of easy-to-read, accessibility and usability guidelines and standards. The research-based Web Design and Usability Guidelines of the US government (www.usability.gov) can serve as a source of inspiration for this practice of building up a body of evidence-based accessible solutions for texts, pages, sites and applications. In this way, we use the current expertise in user-centered evaluation of usability to create a place where Easy-to-read can meet the Accessible Web, particularly in the context of e-government information and self-services.

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